Direct Corruption of Electromagnetism In-Flight - A New Jamming Paradigm

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Introduction

As novel metamaterials make it possible to block or permit EM to pass through electromagnetic shielding with unprecedented selectivity, the concept of simply drowning out comparatively quiet signals with loud signals is likely destined to become outmoded. A new approach to signal jamming will be required when contending with adversaries employing sophisticated anti-jamming mechanisms including those already promulgated by this author.

Although artificial intelligence is increasingly being utilized for the execution step of the kill chain in the event of radio jamming, permitting an AI to have such a level of autonomy in high-stakes scenarios introduces an unacceptably high risk of mission failure or of collateral damage. The effective jamming a drone, even when it features AI-based autonomy of decision making, can reduce the effectiveness of combat drones. For example, an AI-enabled combat drone, when jammed, would follow a predictable pattern of flight, making the takedown of the drone more readily attainable.

Abstract

The non-trivial magnetic moment of soliton waves recommend them for the additional application (of a great many applications) of the corruption of digital datastreams carried over radio frequencies. When a soliton wave interacts with conventional electromagnetism, one notable effect is the alteration of the frequency of the waveform. The projection of soliton waves in the direction of EM in mid-flight, particularly given that the soliton waves are projected at a randomly varied interval, could be predicted to have the effect of corrupting the EM in mid-flight, thereby changing the content of the data received and rendering it useless, particularly if an encrypted communications protocol is used.

As passing a soliton wave through a given pattern of electromagnetism would uniformly escalate the frequency of the signal as a whole, that, alone, would be insufficient to ensure signal disruption. It would, furthermore, be necessary to emit waves from an opposing direction and in similarly randomized patterns in order to ensure that each waveform is uniquely either affected or not affected. Soliton waves traveling from opposing directions would negate one another at random points, ensuring that a random pattern of alteration is applied to the signal EM in-flight.

Another possible challenge implied by this approach include a potential need to jam multiple control signals emanating from multiple directions.

Conclusion

As RF jamming becomes increasingly difficult, unconventional approaches to primary jamming are called for.